

# INTERNATIONAL SEARCH REPORT

International application No.

PCT/US04/18642

**A. CLASSIFICATION OF SUBJECT MATTER**

IPC(7) : B01L 3/02, 3/00, 11/00; G01N 21/00, 1/18, 1/10  
 US CL : 422/100, 102, 103, 81; 436/180, 178; 73/863.72, 863.73, 863.84, 863.86  
 According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)  
 U.S. : 422/100, 102, 103, 81; 436/180, 178; 73/863.72, 863.73, 863.84, 863.86

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)  
 Please See Continuation Sheet

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X, P	US 6,644,944 B2 (KARP) 11 November 2003, entire document	1, 2-3, 6, 7-12, 14, 16-18, 21, 31, 37-47, 50-51, 58, 59, 64, 68-71, 74, 77, 82-102, 104, 106-112, 119-121, 127-132, 138-145, 147-149, 152-154, 158-159, 164-169
X	US 2002/0098122 A1 (SINGH et al.) 25 July 2002, entire document	2-3, 6-12, 14, 16-18, 21, 31, 37-46, 58-59, 61, 64-65, 68, 74, 82-89, 91-98, 106-109, 120-121, 127-131, 138-143, 148-149, 152, 158-159, 164-169
A, P	US 2004/0063217 A1 (WEBSTER et al.) 01 April 2004	1, 7, 11

Further documents are listed in the continuation of Box C.

See patent family annex.

* Special categories of cited documents:	"T"	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A" document defining the general state of the art which is not considered to be of particular relevance	"X"	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E" earlier application or patent published on or after the international filing date	"Y"	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&"	document member of the same patent family
"O" document referring to an oral disclosure, use, exhibition or other means		
"P" document published prior to the international filing date but later than the priority date claimed		

Date of the actual completion of the international search

03 February 2005 (03.02.2005)

Date of mailing of the international search report

07 MAR 2005

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**INTERNATIONAL SEARCH REPORT**International application No.  
PCT/US04/18642**C. (Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT**

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A, P	US 2003/0143754 A1 (LUM et al.) 31 July 2003	1, 7, 11
A	US 2002/0127146 A1 (BERGH et al.) 12 September 2002	1, 7, 11
A, E	US 6,848,462 B2 (COVINGTON et al.) 01 February 2005	1, 7, 11
A	US 5,947,167 A (BOGEN et al.) 07 September 1999	1, 7, 11
A	US 5,162,237 A (MESSENGER et al.) 10 November 1992	1, 7, 11
A	US 4,515,127 A (WELKER) 25 June 1985	1, 7, 11

**INTERNATIONAL SEARCH REPORT**

International application No.  
PCT/US04/18642

**Continuation of B. FIELDS SEARCHED Item 3:**

East

Keywords: unidirectional valve, one-directional flow valve, plunger piston, diaphragm, metering, deflection, compressible, chamber, reservoir, staining, check valve, one way valve, flexible, plunger, piston